controls, and enforcement systems that are preventive rather than corrective. The review of developing or established programs allowed the committee to identify factors that are important in implementing effective programs. Technical and institutional features have also been identified that may have application in other areas of the country. Because, by definition, preventive programs are long range, few explicit results have been demonstrated and thus have not been described in this report. Additionally, the committee did not have the time to review, and was not charged with reviewing, federal policies and programs, that may in some instances limit the effectiveness of state implementation of ground water protection programs.

There are several general policies that can be assumed in the objectives of ground water protection programs. One such policy is strictly economic; that is, the program can be established to meet only cost-effectiveness and related economic objectives. Another approach is oriented to public health objectives, in which the program is structured to achieve health protection goals. A third policy approach is one of total resource management, which addresses all or most interrelated issues and concerns, such as economics, public health, ecological protection, long-term resource conservation, and resource use priorities. The committee assumed a total resource management policy in their approach to examining protection programs. Although some components of the total system receive separate attention in various parts of the report (such as water quality standards or economics in Chapter 4), the committee does not intend to convey an impression that any one of these components should be the principal concern of a protection strategy. Ground water protection programs should encompass all significant aspects of resource management.

The committee, which included experts in water supply management, toxicology, economics, environmental management, ground water quality and protection, political science, hydrogeology, water treatment, civil and environmental engineering, public policy issues, and environmental law, began its deliberations in January 1985. A writing workshop was held in San Diego, California, in July to prepare an initial draft report. Several drafts were produced between July and February 1986, with the final report delivered to the Environmental Protection Agency in April 1986. This study was based on information received from representatives of state and local health and environmental departments or ground water protection offices in the 10 states and 3 local areas chosen for review. The programmatic information and resulting recommendations are based solely on the committee's understanding of the factual situation, which was derived from a brief overview. In-depth study and greater familiarity might change details but not substantive conclusions and recommendations. Those state and local programs reviewed were in Kansas; Arizona; California; Dade County, Florida; the